

Contents

Report Volume – I

Foreword
 Preface
 Check List
 Salient Features
 Executive Summary
 List of Officers involved in preparation of DPR
 Contents

| Para No. | Particulars | Page No. |
|----------|--|----------|
| | Chapter 1 | |
| | Introduction | |
| 1.0 | General | 1 |
| 1.1 | Himalayan rivers development | 1 |
| 1.2 | Peninsular rivers development | 1 |
| 1.3 | Proposed link canals between Mahanadi and Cauvery as per Peninsular Component of National Perspective Plan (NPP) | 2 |
| 1.3.1 | Brief description of the nine-link system as per the National Perspective Plan | 3 |
| 1.4 | Phased development of the nine-link system | 9 |
| 1.4.1 | Phase I of the nine-link system in peninsular component | 10 |
| 1.4.2 | Phase II of the nine-link system in peninsular component | 12 |
| 1.4.3 | The Cauvery (Kattalai) – Vaigai – Gundar link project | 13 |
| 1.5 | Location of project area | 14 |
| 1.6 | Communication facilities | 14 |
| 1.7 | General climatic conditions of the states and project area | 14 |
| 1.8 | General topography, physiographic and geology of the project area | 15 |
| 1.9 | Population | 15 |
| 1.10 | Occupation | 16 |
| 1.11 | Natural resources | 17 |
| 1.11.1 | Water resources | 17 |
| 1.11.2 | Land resources | 17 |
| 1.11.3 | Agriculture | 18 |
| 1.11.4 | Mineral wealth | 19 |
| 1.11.5 | Industry | 20 |
| 1.11.6 | Tourism | 21 |
| 1.11.7 | Scriptural importance | 21 |
| 1.11.8 | Culture & people | 22 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| 1.12 | Land use and socio-economic aspects | 22 |
| 1.12.2 | Socio-economic aspects | 22 |
| 1.12.3 | Drought prone areas | 23 |
| 1.12.4 | Ground water | 23 |
| 1.12.5 | Water quality | 24 |
| 1.13 | Choice of the project | 25 |
| 1.13.1 | Project planning and optimization of benefits | 25 |
| 1.14 | Stages / phases of development of the link project | 26 |
| 1.15 | Fitment of the scheme in overall development of the region | 27 |
| 1.16 | Intimation to other development authorities regarding the scheme | 27 |
| 1.17 | Public announcements and public hearings | 27 |
| 1.18 | Interlinking of the scheme with neighboring schemes | 27 |
| 1.19 | Inter-state / International aspects | 28 |
| 1.20 | Cost and benefits of the scheme | 28 |
| 1.20.1 | Cost of the project | 28 |
| 1.20.2 | Benefits from the project | 29 |
| 1.21 | Public cooperation and participation | 30 |
| 1.22 | Provision for domestic and industrial water supply | 30 |
| 1.23 | Methodology | 30 |
| 1.23.1 | Survey & Investigations | 30 |
| 1.23.2 | Special studies by other Agencies | 31 |
| 1.23.3 | Technical studies | 31 |
| 1.23.4 | Clearances required | 33 |
| | Chapter 2 Physical Features | |
| 2.0 | General | 35 |
| 2.1 | Geographical Disposition | 35 |
| 2.2 | Topography of the basin, reservoir and command area | 36 |
| 2.2.1 | Cauvery basin | 36 |
| 2.2.1.1 | Tirumanimuttar Sub-basin of Cauvery basin | 37 |
| 2.2.2 | Basin area of streams between Cauvery and Vaigai | 38 |
| 2.2.3 | Vaigai basin | 38 |
| 2.2.4 | Basin area of streams between Vaigai and Vaippar | 39 |
| 2.2.5 | Topography of Kattalai barrage | 39 |
| 2.2.6 | Topography of Command area | 40 |
| 2.3 | Geology of the Basins, Reservoirs and Command Area | 40 |
| 2.3.1 | Geology of Tirumanimuttar sub-basin | 41 |
| 2.3.2 | Geology of basin area of the streams between Cauvery and Vaigai | 42 |
| 2.3.3 | Geology of Vaigai basin | 43 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| 2.3.4 | Geology of the basin areas of the streams between Vaigai and Vaippar | 44 |
| 2.3.5 | Geology of the command area | 44 |
| 2.3.5.1 | Tiruchirappalli and Karur districts | 45 |
| 2.3.5.2 | Pudukkottai district | 46 |
| 2.3.5.3 | Sivaganga district | 46 |
| 2.3.5.4 | Virudhunagar district | 47 |
| 2.3.5.5 | Ramanathapuram district | 49 |
| 2.3.5.6 | Thoothukudi district | 50 |
| 2.4 | River system and catchment area | 51 |
| 2.4.1 | Tirumanimuttar sub-basin of Cauvery basin | 51 |
| 2.4.2 | Basin area of Streams between Cauvery and Vaigai | 52 |
| 2.4.3 | Vaigai basin | 54 |
| 2.4.4 | Basin area of Streams between Vaigai and Vaippar | 55 |
| 2.5 | Basic Characteristics | 55 |
| 2.5.1 | Tirumanimuttar sub-basin of Cauvery basin | 55 |
| 2.5.1.1 | Rainfall | 56 |
| 2.5.1.2 | Temperature | 56 |
| 2.5.1.3 | Relative Humidity | 56 |
| 2.5.1.4 | Wind speed | 56 |
| 2.5.1.5 | Cloud cover | 56 |
| 2.5.2 | Basin area of streams between Cauvery and Vaigai | 57 |
| 2.5.2.1 | Rainfall | 57 |
| 2.5.2.2 | Temperature | 57 |
| 2.5.2.3 | Relative Humidity | 57 |
| 2.5.2.4 | Wind speed | 57 |
| 2.5.2.5 | Cloud cover | 58 |
| 2.5.3 | Vaigai basin | 58 |
| 2.5.3.1 | Rainfall | 58 |
| 2.5.3.2 | Temperature | 58 |
| 2.5.3.3 | Relative Humidity | 58 |
| 2.5.3.4 | Wind speed | 59 |
| 2.5.3.5 | Cloud cover | 59 |
| 2.5.4 | Basin area of streams between Vaigai and Vaippar | 59 |
| 2.5.4.1 | Rainfall | 59 |
| 2.5.4.2 | Temperature | 59 |
| 2.5.4.3 | Relative Humidity | 60 |
| 2.5.4.4 | Wind speed | 60 |
| 2.5.4.5 | Cloud cover | 60 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| | Chapter 3 Interstate Aspects | |
| 3.0 | General | 61 |
| 3.1 | States Traversed by the Rivers | 61 |
| 3.1.1 | The Cauvery Basin | 61 |
| 3.1.2 | Basin area of the Streams between Cauvery and Vaigai | 62 |
| 3.1.3 | The Vaigai basin | 62 |
| 3.1.4 | Basin area of the Streams between Vaigai and Vaippar | 63 |
| 3.2 | Distribution of catchment in state and yields from the catchment of the state concerned | 63 |
| 3.2.1 | Water availability | 64 |
| 3.3 | Effect on Project and of the project on the Interstate Agreement on Sharing of waters, sharing the benefits and costs, acceptance of submergence in the upstream state etc. if any | 65 |
| 3.3.1 | Effect on project and of the project on the Inter-state Adjudication, if any | 66 |
| 3.3.2 | Effect on project and of the project on the Interstate Aspects of Territory, Property etc. Coming under Submergence, Project Affected People, Rehabilitation, Compensation etc. | 66 |
| 3.3.3 | Effect on project and of the project on the Existing and Sanctioned Project | 66 |
| 3.3.4 | Any other Aspect of the Project Involving Interstate Problems | 66 |
| 3.4 | Interstate Agreement / Legal Instruments | 67 |
| 3.4.1 | Agreement for use of Periyar Waters in Vaigai Basin | 67 |
| 3.4.2 | Cauvery Water Disputes Tribunal (CWDT) Award | 67 |
| 3.4.3 | Supreme Court Verdict on Cauvery River | 68 |
| 3.5 | Impact of Water diversion on Interstate Water Sharing Agreement | 69 |
| | Chapter 4 Surveys and Investigations | |
| 4.0 | General | 71 |
| 4.1 | Topographical Survey | 73 |
| 4.1.1 | Rivers | 75 |
| 4.1.2 | Reservoirs | 75 |
| 4.1.3 | Head works | 75 |
| 4.1.4 | Plant and Colony layout | 75 |
| 4.1.5 | Canal and Water conductor system and Canal structures | 76 |
| 4.1.6 | Power house, Switch yard, Surge shaft, Tail race etc., | 78 |
| 4.1.7 | Tunnel, Adits and Penstock | 78 |
| 4.1.8 | Command area | 78 |
| 4.2 | Other surveys | 78 |

| Para No. | Particulars | Page No. |
|-----------------|---|-----------------|
| 4.2.1 | Archaeological Survey in the canal area | 78 |
| 4.2.2 | Mineral Survey in the canal area | 79 |
| 4.2.3 | Right of way surveys for the reservoir | 79 |
| 4.2.4 | Communication Surveys | 79 |
| 4.2.5 | Drainage Surveys | 80 |
| 4.2.6 | Soil surveys | 80 |
| 4.2.7 | Cadastral Surveys | 81 |
| 4.3 | Geology and Seismic investigations | 81 |
| 4.3.1 | Regional Geology | 81 |
| 4.3.2 | Local Geology | 83 |
| 4.3.3 | Geological and Geotechnical Investigations | 83 |
| 4.3.4 | Laboratory Investigation of Rock Samples | 85 |
| 4.3.5 | Geophysical Investigations | 86 |
| 4.3.6 | Seismic Investigations | 86 |
| 4.4 | Geotechnical Investigations (Soils) | 86 |
| 4.4.1 | Soil investigations along the Canal Alignment | 87 |
| 4.4.2 | Laboratory Investigation on soil samples from Borrow Area along the Canal Alignment | 87 |
| 4.4.3 | Foundation Investigations of CD structures | 89 |
| 4.5 | Construction Material Survey | 91 |
| 4.5.1 | Rock and Aggregates | 91 |
| 4.5.2 | Sand | 93 |
| 4.5.3 | Bricks and Tiles | 94 |
| 4.5.4 | Pozzolana | 94 |
| 4.5.5 | Cement | 94 |
| 4.5.6 | Steel | 94 |
| 4.5.7 | Scarce material | 94 |
| 4.5.8 | Any other material | 95 |
| 4.6 | Hydrological and Meteorological Investigations | 95 |
| | Chapter 5 Hydrology and Water Assessment | |
| 5.0 | General | 97 |
| 5.1 | General Information about Regions | 98 |
| 5.1.1 | Cauvery Basin | 98 |
| 5.1.2 | Streams between Cauvery and Vaigai | 99 |
| 5.1.3 | Vaigai Basin | 100 |
| 5.1.4 | Streams between Vaigai and Vaippar | 100 |
| 5.2 | Specific Information | 101 |
| 5.2.1 | Drainage Basin | 101 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| 5.2.2 | Command Area | 103 |
| 5.2.3 | Floods and Drainages | 104 |
| 5.2.4 | River Geometry | 105 |
| 5.2.5 | Ground Water Recharge | 106 |
| 5.2.6 | Barrage Area | 107 |
| 5.2.7 | Other Water Usage | 107 |
| 5.2.8 | Navigation | 107 |
| 5.3 | Data Availability | 107 |
| 5.3.1 | Hydrological and Meteorological Investigation | 107 |
| 5.3.1.1 | Rainfall and Snowfall | 107 |
| 5.3.1.2 | Pan evaporation | 108 |
| 5.3.1.3 | Climatological Parameters like Temperature, Humidity and Wind speed | 108 |
| 5.3.1.4 | River Gauge & Discharge | 108 |
| 5.3.1.5 | Sediment (Suspended and Bed Load Inflow) | 110 |
| 5.3.1.6 | Water quality | 111 |
| 5.4 | Water Availability Studies | 113 |
| 5.4.1 | Methodology | 113 |
| 5.4.2 | Hydrological and Water Balance Studies of the Cauvery Basin up to Kattalai Barrage | 115 |
| 5.4.3 | Hydrological and Water Balance Studies of Streams between Cauvery and Vaigai | 119 |
| 5.4.4 | Hydrological and Water Balance Studies of Vaigai Basin | 122 |
| 5.4.5 | Hydrological and Water Balance Studies of Steams between Vaigai and Vaippar | 125 |
| 5.5 | Proposed diversion from Cauvery at Kattalai Barrage | 128 |
| 5.5.1 | Generation of monthly flows | 129 |
| 5.5.2 | Duration of the water diversion | 130 |
| 5.6 | Consistency of Data | 130 |
| 5.6.1 | Internal consistency | 130 |
| 5.6.2 | External consistency | 131 |
| 5.6.3 | Stationarity and homogeneity test | 132 |
| 5.7 | Cauvery (Kattalai) - Vaigai – Gundar link project: Effect on Hydrological regime of Lower Cauvery sub-basin d/s of Kattalai barrage site | 132 |
| 5.8 | Presentation of hydrological inputs for simulation | 132 |
| 5.8.1 | Water inflows | 132 |
| 5.8.2 | Sedimentation Studies | 132 |
| 5.8.3 | Potential evapo-transpiration and rainfall | 133 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| 5.8.4 | Flood inputs | 133 |
| 5.8.5 | Inputs for water quality | 133 |
| 5.8.6 | Low flow inputs | 134 |
| 5.8.7 | Surface to ground water recharge | 134 |
| 5.9 | Simulation Studies of Kattalai Pond | 134 |
| 5.9.1 | Project Demands | 135 |
| 5.10 | Studies for design drainage in the command Area | 135 |
| 5.11 | Determination of levels for location structures on outlets | 136 |
| 5.11.1 | Location of outlets | 136 |
| 5.12 | Model Studies | 136 |
| 5.13 | Minimum flow for environmental consideration | 136 |
| 5.14 | Effect of project on hydrologic regime | 136 |
| 5.14.1 | Impact on existing projects in the downstream of planned project | 137 |
| 5.14.2 | Effect on low flows | 137 |
| 5.14.3 | Effect on flood hydrology | 137 |
| 5.14.4 | Effect on total runoff | 137 |
| 5.14.5 | River hydraulics | 137 |
| 5.14.6 | Sediment yields, sediment carrying capacities and aggradations and degradations at various locations | 138 |
| 5.14.7 | Water Quality | 138 |
| 5.14.8 | Water Demand | 138 |
| 5.15 | Water allocation and inter-State aspects | 138 |
| | Chapter 6 Design Aspects | |
| 6.0 | Engineering Assessment | 139 |
| 6.1 | General | 139 |
| 6.2 | Geology, Seismicity and Foundation treatment | 140 |
| 6.2.1 | Geology | 140 |
| 6.2.2 | Geophysical Investigation | 140 |
| 6.2.3 | Sub surface exploration | 140 |
| 6.2.4 | Seismicity | 143 |
| 6.2.5 | Foundation Treatment | 143 |
| 6.3 | Head Regulator | 144 |
| 6.4 | Design Aspects of Link Canal | 147 |
| 6.4.1 | Canal Alignment | 147 |
| 6.4.1 (i) | Reach from RD 0 to 34.56 km (topo Maps 58 J/1,J/5) | 151 |
| 6.4.1 (ii) | Reach from RD 34.56 to 45.56 km (58 J/9) | 151 |
| 6.4.1(iii) | Reach from RD 45.56 to 69.34 km (58 J/10) | 152 |
| 6.4.1(iv) | Reach from RD 69.34 to 96.85 km (58 J/14) | 152 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| 6.4.1(v) | Reach from RD 96.85 km to 127.24 km (58 J/15) | 153 |
| 6.4.1(vi) | Reach from RD 127.24 to 153.75 km (58 J/16) | 153 |
| 6.4.1(vii) | Reach from RD 153.75 to 177.54 km (58 J/12) | 153 |
| 6.4.1(viii) | Reach from RD 177.54 to 203.93 km (58 K/9) | 154 |
| 6.4.1(ix) | Reach from RD 203.93 to 222.42 km (58 K/5) | 154 |
| 6.4.1(x) | Reach from RD 222.42 to 245.11 km (58 K/6) | 153 |
| 6.4.1(xi) | Reach from RD 245.11 to 256.82 km (58 K/2) | 155 |
| 6.4.2 | Canal Capacity | 155 |
| 6.5 | Hydraulic Designs | 156 |
| 6.5.1 | Link Canal / Open canal | 156 |
| 6.5.2 | Tunnels | 156 |
| 6.5.2 (i) | Tunnels at RD 82.30 km | 159 |
| 6.5.2(ii) | Tunnel at RD 104.1 km | 160 |
| 6.5.2(iii) | Tunnel at RD 148.1 km | 161 |
| 6.5.2(iv) | Tunnel at RD 156.3 km | 162 |
| 6.5.3 | Details of lining Provided | 162 |
| 6.5.4 | Transmission losses | 163 |
| 6.6 | Description of Soil Profile along the Canal Alignment based on Geo-Physical Investigations | 163 |
| 6.6(i) | Red Sandy Soils | 164 |
| 6.6(ii) | Red lateritic sandy soil | 164 |
| 6.6(iii) | Black cotton soil | 164 |
| 6.7 | Canal Structures across Link Canal | 165 |
| 6.7.1 | Cross Drainage Works / Regulators | 165 |
| 6.7.2 | Layout and Foundation | 165 |
| 6.7.3 | Cross Drainage works | 166 |
| 6.8 | Study of Integrated Network of Canal System and its Operation | 166 |
| 6.9 | Broad Outline of Canal Automation and Branch Canals up to 8 Cumec | 172 |
| 6.10 | Other Studies | 172 |
| | Chapter 7 Reservoirs | |
| 7.0 | General | 173 |
| 7.1 | Kattalai Barrage | 173 |
| 7.1.1 | Fixation of Storage and Reservoir Levels | 174 |
| 7.1.2 | Water Quality | 174 |
| 7.1.3 | Sedimentation | 176 |
| 7.1.4 | Life of the Reservoir | 177 |
| 7.1.5 | Capacities | 177 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| 7.1.6 | Area of Submergence | 177 |
| 7.1.7 | Flood Absorption / Reservoir Operation Policy | 177 |
| | Chapter 8 Irrigation planning and command area development | |
| 8.1 | General | 179 |
| 8.2.1 | Existing / proposed irrigation facilities in the proposed project command area | 179 |
| 8.2.2 | Existing irrigation facilities in the command area | 180 |
| 8.3.1 | Current agriculture scenario and existing cropping pattern | 180 |
| 8.3.2 | Proposed command area | 181 |
| 8.4 | Soil surveys | 182 |
| 8.4.1 | Soil and capability land irrigability classification | 183 |
| 8.5 | Agro-climatic conditions | 183 |
| 8.5.1 | Rainfall | 184 |
| 8.5.2 | Temperature | 184 |
| 8.5.3 | Humidity | 184 |
| 8.5.4 | Sunshine | 184 |
| 8.5.5 | Wind Velocity | 185 |
| 8.5.6 | Evaporation | 185 |
| 8.5.7 | Cloud cover | 185 |
| 8.5.8 | Frost free days | 185 |
| 8.6 | Proposed cropping pattern | 185 |
| 8.6.1 | Approved cropping pattern | 185 |
| 8.6.2 | Cropping pattern adopted under the link project | 186 |
| 8.6.3 | Proposed irrigation facilities | 186 |
| 8.6.4 | Scope for double & multiple cropping pattern and change in cropping pattern | 187 |
| 8.6.5 | Attitude of farmers towards modern irrigated agricultural practices | 188 |
| 8.7 | Assessment of water requirement | 188 |
| 8.7.1 | Layout of direct sluices, branch canals/ distributaries and their commands | 188 |
| 8.7.2 | Net increase in irrigation facilities due to the link project | 190 |
| 8.7.3 | Crop water requirement for irrigation | 190 |
| 8.7.4 | Domestic & industrial water supply | 190 |
| 8.7.5 | Transmission losses | 192 |
| 8.7.6 | Environmental releases | 192 |
| 8.7.7 | Evaporation losses | 192 |
| 8.7.8 | Total water demands of the link project | 192 |
| 8.8 | Water planning | 192 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| 8.8.1 | Designed head discharge of the link canal | 193 |
| 8.8.2 | Ground water | 193 |
| 8.8.3 | Conjunctive use / Ground water support | 194 |
| 8.9 | Command area drainage | 194 |
| 8.9.1 | Water course / field channels | 195 |
| 8.10 | Water management | 195 |
| 8.10.1 | Proposals for participatory irrigation management including formation of water user's association | 195 |
| 8.10.2 | Scope of introduction of modern technology viz sprinklers drip irrigation etc. | 196 |
| 8.10.3 | Existing practice of department of agriculture for popularizing micro irrigation | 196 |
| 8.10.4 | Facilities for training | 197 |
| 8.10.5 | Existing extension activity and proposals for its improvement | 197 |
| 8.11 | Agricultural support services | 197 |
| 8.11.1 | Agricultural marketing | 197 |
| 8.11.2 | Development of horticulture | 197 |
| 8.11.3 | Organic farming | 198 |
| 8.11.4 | Minimum support price | 198 |
| 8.11.5 | Crop insurance | 198 |
| 8.11.6 | Agricultural credit | 198 |
| 8.11.7 | Use of improved seeds | 199 |
| 8.12 | Command Area | 199 |
| 8.12.1 | Location | 199 |
| 8.12.2 | Classification of land (Forest, Grass Land, Cultivable Land, Cultivable Waste, Barren Land) | 199 |
| 8.12.3 | Size of land holding | 199 |
| 8.12.3.1 | Climate of command area | 200 |
| 8.12.4 | Irrigation | 200 |
| 8.12.5 | Socio-economic aspects | 201 |
| 8.12.5.1 | Population and major occupation | 202 |
| 8.12.6 | Infrastructure facilities | 203 |
| 8.12.7 | Topography and soils | 204 |
| 8.12.8 | Ground water and drainage | 205 |
| 8.12.9 | Agriculture | 205 |
| 8.12.10 | Farmers' attitude towards improved agricultural practices | 206 |
| 8.12.11 | Identification of problems in en-route command area | 206 |
| 8.12.12 | Proposed cropping pattern with justification based on land irrigability classification, agro climatic conditions developed irrigated cropping pattern in adjoining projects / areas etc. | 207 |
| 8.12.13 | Land development work proposals | 208 |

| Para No. | Particulars | Page No. |
|-----------------|---|-----------------|
| 8.12.14 | Ayacut roads | 208 |
| 8.12.15 | Benefits | 208 |
| 8.12.15(i) | Crop-wise increase in yield per ha and total estimated output from the command | 208 |
| 8.12.15(ii) | Estimated value of increased production | 209 |
| 8.12.15(iii) | Likely socio-economic aspects | 209 |
| | Chapter 9 Power | |
| 9.0 | General | 211 |
| 9.1 | Status of power development in Tamil Nadu | 211 |
| 9.1.1 | Available Generating capacity (MW) in Tamil Nadu | 211 |
| 9.1.2 | Available Generating Capacity in the State (from different sources category wise) | 216 |
| 9.1.3 | Present status of Utilisation of power | 217 |
| 9.2 | Power requirement | 218 |
| 9.2.1 | Anticipated requirement of Energy (MU) and Peak Load (MW) | 219 |
| 9.3 | Future plans of Power Development in the State | 219 |
| 9.4 | Demand and Supply of Electricity | 221 |
| 9.5 | Impact of link project on power scenario of the state | 222 |
| | Chapter 10 Environmental Impact Assessment and Environmental Management Plan | |
| 10.0 | General | 225 |
| 10.1 | The Proposed Project | 226 |
| 10.1.1 | Project Background | 226 |
| 10.1.2 | Project Justification | 226 |
| 10.1.3 | Project Description | 227 |
| 10.2 | Study Area | 227 |
| 10.3 | Legal Status of the Project | 228 |
| 10.4 | Baseline Environmental Data | 229 |
| 10.4.1 | Air Environment | 229 |
| 10.4.1.1 | Ambient Air Quality | 229 |
| 10.4.1.2 | Noise Environment | 232 |
| 10.4.1.3 | Meteorology | 233 |
| 10.4.2 | Water Quality | 234 |
| 10.4.2.1 | Surface Water Quality Monitoring | 234 |
| 10.4.2.2 | Ground Water Quality Monitoring | 237 |
| 10.4.3 | Land Environment | 240 |
| 10.4.3.1 | Land Use | 240 |

| Para No. | Particulars | Page No. |
|-----------------|---|-----------------|
| 10.4.3.2 | Mineral Deposits | 242 |
| 10.4.3.3 | Historic/ Archaeological Monuments | 242 |
| 10.4.3.4 | Geology | 242 |
| 10.4.3.5 | Soils | 244 |
| 10.4.4 | Terrestrial Ecology | 244 |
| 10.4.4.1 | Delineation of Flora in Study Area | 244 |
| 10.4.4.2 | Status of Fauna | 244 |
| 10.4.4.3 | Status of Fish Fauna | 245 |
| 10.4.5 | Public Health | 245 |
| 10.4.5.1 | Medical and Health Facilities in the Project Command Area | 245 |
| 10.4.5.2 | Drinking Water Supply | 246 |
| 10.4.5.3 | Sanitation | 247 |
| 10.4.5.4 | Water Borne and Communicable Diseases | 247 |
| 10.5 | Environmental Impact Assessment | 247 |
| 10.5.1 | Impacts on Air Environment | 248 |
| 10.5.1.1 | Impact on Air Quality | 248 |
| 10.5.1.2 | Impacts on Noise Environment | 248 |
| 10.5.2 | Impacts on Water Resources and Quality | 249 |
| 10.5.3 | Impacts on Land Environment | 252 |
| 10.5.4 | Impact on Biological Environment | 254 |
| 10.5.4.1 | Terrestrial Environment | 254 |
| 10.5.4.1.1 | Impacts on Forest Cover | 254 |
| 10.5.4.2 | Impacts on Wildlife | 255 |
| 10.5.4.3 | Impacts on Aquatic Ecology | 255 |
| 10.5.4.4 | Impacts on Socio-Economic Environment | 256 |
| 10.5.5 | Impacts on Micro Climate | 258 |
| 10.5.6 | Greenhouse Gas Emissions | 258 |
| 10.6 | Environmental Management Plan(EMP) | 259 |
| 10.6.1 | Pollution Control at Construction Sites | 259 |
| 10.6.1.1 | Air Pollution Control | 259 |
| 10.6.1.2 | Noise Control Measures | 261 |
| 10.6.2 | Water Pollution | 262 |
| 10.6.3 | Land Management Plan | 263 |
| 10.6.3.1 | Disposal of Muck and Reclamation of Muck Disposal Sites | 263 |
| 10.6.3.2 | Restoration Plan for Quarry Sites | 264 |
| 10.6.3.3 | Restoration of Colony and Office Complex | 267 |
| 10.6.4 | Biodiversity Conservation and Management Plan | 267 |
| 10.6.4.1 | Compensatory Afforestation | 267 |
| 10.6.4.2 | Biodiversity Management Plan | 267 |

| Para No. | Particulars | Page No. |
|-----------------|---|-----------------|
| 10.6.5 | Green Belt Development Plan | 270 |
| 10.6.6 | Environmental Management in Labour Camps | 270 |
| 10.6.7 | Public Health | 271 |
| 10.6.8 | Catchment Area Treatment Plan | 273 |
| 10.6.8.1 | Data Acquisition | 273 |
| 10.6.8.2 | Estimation of Soil Loss using Silt Yield Index (SYI) Method | 273 |
| 10.6.8.3 | Catchment Area Treatment Measures | 274 |
| 10.6.8.4 | Silt Transfer | 274 |
| 10.6.9 | Command Area Development/Management | 274 |
| 10.6.10 | Impact on Water Quality Downstream of Kattalai Barrage | 275 |
| 10.6.11 | Disaster Management Plan | 275 |
| 10.6.12 | Energy Conservation Measures | 275 |
| 10.6.12.1 | Energy Conservation during Construction Phase | 276 |
| 10.6.12.2 | Energy Conservation during Operation Phase | 277 |
| 10.6.13 | Environmental Monitoring Programme | 277 |
| 10.6.14 | Cost of Environmental Management Plan | 280 |
| | Chapter 11 Socio-Economic Studies and Resettlement and Rehabilitation Plan | |
| 11.0 | Introduction | 281 |
| 11.1 | Socio-Economic Profile and Survey | 282 |
| 11.1.1 | Regional Profile from the Available Secondary Data | 283 |
| 11.1.1.1 | Demography | 283 |
| 11.1.1.2 | Livestock and Poultry | 284 |
| 11.1.1.3 | Agriculture | 286 |
| 11.1.1.4 | Literacy | 286 |
| 11.1.2 | Salient Features of the Link | 287 |
| 11.1.3 | Sample Design and Methodology | 287 |
| 11.1.3.1 | Selection of Villages | 288 |
| 11.1.3.2 | Selection of Households | 288 |
| 11.1.4 | Questionnaire | 288 |
| 11.1.5 | Profile of the Study Area | 289 |
| 11.1.5.1 | Karur District | 294 |
| 11.1.5.1(i) | Demography | 294 |
| 11.1.5.1(ii) | Caste | 295 |
| 11.1.5.1(iii) | Literacy | 296 |
| 11.1.5.1(iv) | Educational Facilities | 296 |
| 11.1.5.1(v) | Land Use Pattern | 297 |
| 11.1.5.1(vi) | Sources of Water | 298 |

| Para No. | Particulars | Page No. |
|-----------------|---|-----------------|
| 11.1.5.1(vii) | Power Supply | 299 |
| 11.1.5.1(viii) | Health Facilities | 300 |
| 11.1.5.1(ix) | Post and Telephones | 301 |
| 11.1.5.1(x) | Transport Facility | 302 |
| 11.1.5.1(xi) | Banking and Credit Societies Facilities | 303 |
| 11.1.5.2 | Tiruchirappalli District | 304 |
| 11.1.5.2(i) | Demography | 304 |
| 11.1.5.2(ii) | Caste | 305 |
| 11.1.5.2(iii) | Literacy | 306 |
| 11.1.5.2(iv) | Educational Facilities | 306 |
| 11.1.5.2(v) | Land Use Pattern | 307 |
| 11.1.5.2(vi) | Sources of Water | 307 |
| 11.1.5.2(vii) | Power Supply | 308 |
| 11.1.5.2(viii) | Health Facilities | 308 |
| 11.1.5.2(ix) | Post and Telephones | 308 |
| 11.1.5.2(x) | Transport Facility | 309 |
| 11.1.5.2(xi) | Banking and Credit Societies Facilities | 309 |
| 11.1.5.3 | Pudukkottai District | 310 |
| 11.1.5.3(i) | Demography | 310 |
| 11.1.5.3(ii) | Caste | 311 |
| 11.1.5.3(iii) | Literacy | 312 |
| 11.1.5.3(iv) | Educational Facilities | 313 |
| 11.1.5.3(v) | Land Use Pattern | 314 |
| 11.1.5.3(vi) | Sources of Water | 315 |
| 11.1.5.3(vii) | Power Supply | 315 |
| 11.1.5.3(viii) | Health Facilities | 316 |
| 11.1.5.3(ix) | Post and Telephones | 317 |
| 11.1.5.3(x) | Transport Facility | 318 |
| 11.1.5.3(xi) | Banking and Credit Societies Facilities | 319 |
| 11.1.5.4 | Sivaganga District | 320 |
| 11.1.5.4(i) | Demography | 320 |
| 11.1.5.4(ii) | Caste | 321 |
| 11.1.5.4(iii) | Literacy | 322 |
| 11.1.5.4(iv) | Educational Facilities | 323 |
| 11.1.5.4(v) | Land Use Pattern | 324 |
| 11.1.5.4(vi) | Sources of Water | 325 |
| 11.1.5.4(vii) | Power Supply | 326 |
| 11.1.5.4(viii) | Health Facilities | 327 |
| 11.1.5.4(ix) | Post and Telephones | 328 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| 11.1.5.4(x) | Transport Facility | 329 |
| 11.1.5.4(xi) | Banking and Credit Societies Facilities | 331 |
| 11.1.5.5 | Virudhunagar District | 332 |
| 11.1.5.5(i) | Demography | 332 |
| 11.1.5.5(ii) | Caste | 332 |
| 11.1.5.5(iii) | Literacy | 333 |
| 11.1.5.5(iv) | Educational Facilities | 333 |
| 11.1.5.5(v) | Land Use Pattern | 334 |
| 11.1.5.5(vi) | Sources of Water | 334 |
| 11.1.5.5(vii) | Power Supply | 335 |
| 11.1.5.5(viii) | Health Facilities | 335 |
| 11.1.5.5(ix) | Post and Telephones | 336 |
| 11.1.5.5(x) | Transport Facility | 336 |
| 11.1.5.5(xi) | Banking and Credit Societies Facilities | 337 |
| 11.1.6 | Perception about the Project | 337 |
| 11.2 | Impact of Cauvery (Kattalai) - Vaigai- Gundar link project | 338 |
| 11.2.1 | Short Term Impact of the Link Project | 338 |
| 11.2.2 | Long Term Impact of Link Project | 339 |
| 11.2.3 | Social Impact Assessment | 339 |
| 11.2.3.1 | Impacts Due to Land Acquisition | 339 |
| 11.3 | Rehabilitation and Resettlement | 340 |
| 11.3.1 | Assessment of Economic Loss Due to Displacement | 341 |
| 11.3.1.1 | Land under Acquisition | 341 |
| 11.3.1.2 | Project Affected Community | 341 |
| 11.3.2 | People's Perception towards Rehabilitation Package | 342 |
| 11.3.3 | Rehabilitation and Resettlement Package | 342 |
| 11.3.3.1 | Measures for Resettlement | 342 |
| 11.3.3.2 | Measures for Rehabilitation | 346 |
| 11.3.4 | Local Area Development Plan | 346 |
| 11.3.5 | Provision for R&R | 347 |
| 11.3.6 | Monitoring and Evaluation | 347 |
| 11.4 | Beneficial Economic Impact | 347 |
| 11.4.1 | Beneficial Impact of the Link Canal | 348 |
| 11.4.2 | Employment Generation during Construction of the Project | 348 |
| 11.5 | Impact Matrix | 343 |
| | Chapter 12 Construction Programme, Manpower Deployment and Plant Planning | |
| 12.0 | General | 353 |
| 12.1 | Objective of the Project | 353 |

| Para No. | Particulars | Page No. |
|-----------------|---|-----------------|
| 12.2 | Construction Programme | 354 |
| 12.3 | Basis for Study | 354 |
| 12.4 | Construction material sources | 355 |
| 12.5 | Basic considerations | 356 |
| 12.6 | Scheduled working hours | 356 |
| 12.6.1 | Construction Period | 357 |
| 12.7 | Construction Methodology and Equipment Planning | 357 |
| 12.7.1 | Head works | 358 |
| 12.7.2 | Main Canal Excavation including Head Works and Cross Drainage Structure | 358 |
| 12.7.3 | Tunnels | 359 |
| 12.7.4 | Branch canals and command area | 361 |
| 12.7.5 | Proposed Construction Methods | 361 |
| 12.8 | Manpower Planning | 364 |
| 12.8.1 | Organization setup | 364 |
| 12.9 | Year wise allocation of cost | 365 |
| | Chapter 13 Cost Estimate, Benefit Cost Ratio and Financial Aspects | |
| 13.0 | General | 367 |
| 13.1 | Classification of Units | 368 |
| 13.1.1 | Unit – I: Head Works | 369 |
| 13.1.1.1 | Direct Charges | 369 |
| 13.1.1.2 | Indirect Charges | 373 |
| 13.1.2 | Unit – II: Canal system | 374 |
| 13.1.2.1 | Direct charges | 374 |
| 13.1.2.2 | Indirect Charges | 380 |
| 13.1.3 | Unit – III: Hydroelectric Installation | 380 |
| 13.1.4 | Unit–IV: Navigation | 380 |
| 13.1.5 | Unit–V: Water Supply Works | 380 |
| 13.1.6 | Unit–VI: Command Area Development | 381 |
| 13.2 | Revenues | 381 |
| 13.2.1 | Yearly Programme of Development with respect to the Date of Starting of Construction of the Project | 381 |
| 13.2.2 | Sources of Revenue | 381 |
| 13.2.2.1 | Irrigation benefits | 382 |
| 13.2.2.2 | Water charges (irrigation service fee) | 382 |
| 13.2.2.3 | Sale for Drinking and industrial water supply | 383 |
| 13.2.2.4 | Pisciculture | 383 |
| 13.2.2.5 | Animal husbandry | 385 |

| Para No. | Particulars | Page No. |
|-----------------|--|-----------------|
| 13.2.2.6 | Revenue from Hydro-power | 385 |
| 13.2.2.7 | Navigation | 385 |
| 13.2.2.8 | Auction of Ferry Service, Inundated Land Lease, Auction for Fruit Bearing Trees along Canals, Lease of Land for Shops in Colony Area, Navigational Permits | 386 |
| 13.2.2.9 | Canal bank plantation | 386 |
| 13.2.2.10 | Other Sources : Tourism | 388 |
| 13.2.3 | Concession in Water Rates (Irrigation), Cargo and Passenger Rates, etc. | 388 |
| 13.2.4 | Administrative Charges for Supply of Water and Collection of Revenues etc. | 389 |
| 13.2.5 | If the Area to be Irrigated is Prone to Scarcity, the Expenditure Normally Incurred to Redress the Scarcity | 389 |
| 13.2.6 | Year in which Revenue Would Start Accruing from Various Sources Counting from First Year of Construction | 389 |
| 13.2.7 | Total Income from Various Sources | 389 |
| 13.2.8 | Details of Staff Proposed for Collection of Revenues and its Basis | 390 |
| 13.2.9 | Net Revenue Expected from Different Components of Project | 390 |
| 13.3 | Annual costs | 390 |
| 13.4 | Benefit-Cost ratio | 391 |
| 13.5 | Internal rate of return (IRR) | 391 |
| 13.6 | Benefit-Cost Ratio for Flood Control Component of Projects | 392 |
| 13.7 | Benefits other than those considered in the Benefit- Cost Ratio and Internal Rate of Return | 392 |
| | Chapter 14 Other aspects of the project | |
| 14.0 | General | 393 |
| 14.1 | Scope of the link project | 393 |
| 14.2 | Rights of beneficiary states | 393 |
| 14.3 | CEIA studies | 394 |
| 14.4 | Piped conveyance system | 394 |
| 14.5 | Storages | 394 |
| 14.6 | Solar power potential | 395 |
| 14.7 | Alignment of the Link Canal | 395 |
| 14.8 | Financial resources | 395 |
| 14.9 | Future utilisation of facilities created (Buildings) | 396 |
| 14.10 | Role of the project in addressing the issues | 396 |
| 14.11 | Public co-operation and participation | 397 |
| 14.12 | Public Awareness | 397 |
| | Abbreviations & Symbols | 399 |

Volume II

Annexures of Main Report

| Annexure No. | Details | Page No. |
|--------------|---|----------|
| 1.1 | Land use statistics of the districts falling in the Project area for the year 2016-17 | 1 |
| 4.1 | List of Cross Drainage/Cross Masonry Structures from off take at Kattalai barrage to outfall at Gundar (RD. 0.00 km to 256.82 km) | 2-10 |
| 4.2 | Physiography and soils in the proposed command area | 11-12 |
| 4.3.1 | List of quarries from where Rock samples collected by Central Soil and Materials Research Station New Delhi | 13-15 |
| 4.3.2 | List of quarries from where Sand samples collected by Central Soil and Materials Research Station New Delhi | 16 |
| 5.1 | Availability of Rainfall data of rain-gauge stations in and around the Cauvery basin upto Kattalai barrage | 17-24 |
| 5.2 | Gross annual yield series of Cauvery basin catchment up to Kattalai barrage site for the period from 1951-52 to 2014-15 | 25-28 |
| 5.3 | Sub-basin wise annual irrigation and utilisation (designed) from existing major, medium and minor projects in the Cauvery basin upto Kattalai barrage | 29-35 |
| 5.4 | Sub-basin wise annual irrigation and utilisation (designed) from ongoing major, medium and minor projects in the Cauvery basin upto Kattalai barrage | 36-41 |
| 5.5 | Sub-basin wise annual irrigation and utilisation (as estimated by NWDA) from identified major, medium and minor projects in the Cauvery basin upto Kattalai barrage | 42-49 |
| 5.6 | Requirement of water in Cauvery basin upto Kattalai Barrage | 50 |
| 5.7 | Net annual yield series of Cauvery basin catchment upto Kattalai barrage site for the period from 1951-52 to 2014-15 | 51-54 |

| Annexure No. | Details | Page No. |
|---------------------|---|-----------------|
| 5.8 | Net annual yield series of Cauvery basin upto Kattalai barrage considering the downstream requirement up to Grand Anicut and Cauvery delta for the period from 1951-52 to 2014-15 | 55-56 |
| 5.9 | Monthly inflows at Kattalai barrage site for the period from 1973-74 to 2014-15 | 57-58 |
| 6.1 | Optimal Design of Retaining walls | 59-68 |
| 6.2 | Design of Head regulator at Off take at Kattalai barrage | 69-89 |
| 6.3 | FSL and head loss at Structures (Head loss statement) | 90-140 |
| 6.4 | Geo references of turning points | 141-147 |
| 6.5 | Cutoff statement for the peak discharge in December | 148 |
| 6.6 | Design of Tunnel at RD 82.30 to 86.20 km | 149-158 |
| 6.7.1 | Hydraulic Design of Aqueduct | 159-161 |
| 6.7.2 | Hydraulic Design of Syphon Aqueduct | 162-165 |
| 6.7.3 | Hydraulic Design of canal syphon | 166-180 |
| 6.7.4 | Hydraulic Design of Super passage | 181-183 |
| 6.7.5 | Design of Heal loss for road bridges | 184-185 |
| 6.8 | Design of Aqueduct at RD 34.460 km | 186-205 |
| 6.9 | Design of Super Passage at 101.75 km | 206-222 |
| 6.10 | Design of Syphon Aqueduct at RD 23.35 km | 223-246 |
| 6.11 | Design of Canal syphon RD 5.53 km | 247-268 |
| 6.12 | Design of Cross regulator at RD 96.0 km | 269-290 |
| 6.13 | Design of Double lane Road bridge at RD 19.45 km | 291-297 |
| 6.14 | Design of Under tunnel at RD 34.68 km | 298-309 |
| 7.1 | Salient features of Kattalai Barrage (existing) across Cauvery River at Mayanur | 310-311 |
| 8.1 | Taluk wise land use particulars in the Command area for the year 2017-18 | 312-316 |
| 8.2 | GCA and CCA (Branch canal wise and Taluk wise) | 317-318 |

| Annexure No. | Details | Page No. |
|---------------------|--|-----------------|
| 8.3 | Normal Rainfall (mm) in the vicinity of Command Area (1981-2010) | 319 |
| 8.4 | Monthly Normal Maximum and Minimum Temperature (°C) in the vicinity of Command Area (1981-2010) | 320 |
| 8.5 | Relative Humidity (%) in the vicinity of Command Area (1981-2010) | 321 |
| 8.6 | Mean Wind Speed (km/hr) in the vicinity of Command Area (1981-2010) | 322 |
| 8.7 | Potential Evapo-tranporation (PET), in mm, in the vicinity of Command Area | 323 |
| 8.8 | Weighted average values of Evapotranspiration and Normal rainfall of IMD observatories | 324 |
| 8.9 | Cloud Cover (Okatas) in the vicinity of Command Area (1981-2010) | 325 |
| 8.10 | Computation of crop water requirement for the proposed enroute command area under CVG link based on climatological data of Madurai and Tiruchirappalli IMD observatories | 326-328 |
| 8.10.1 | Monthly crop water requirement for the enroute command area | 329 |
| 8.11.1 | Monthly crop water requirement for the enroute command under Direct sluices | 330 |
| 8.11.2 | Monthly crop water requirement for the enroute command under Gandharvakottai branch | 331 |
| 8.11.3 | Monthly crop water requirement for the enroute command under Alangudi branch | 332 |
| 8.11.4 | Monthly crop water requirement for the enroute command under Tirumayam branch | 333 |
| 8.11.5 | Monthly crop water requirement for the enroute command under Pallathur branch | 334 |
| 8.11.6 | Monthly crop water requirement for the enroute command under Karaikkudi branch | 335 |
| 8.11.7 | Monthly crop water requirement for the enroute command under Devakottai branch | 336 |

| Annexure No. | Details | Page No. |
|---------------------|--|-----------------|
| 8.11.8 | Monthly crop water requirement for the enroute command under Tiruvandanai branch | 337 |
| 8.11.9 | Monthly crop water requirement for the enroute command under Kalaiyar kovil branch | 338 |
| 8.11.10 | Monthly crop water requirement for the enroute command under Manamadurai branch | 339 |
| 8.11.11 | Monthly crop water requirement for the enroute command under Paramakudi branch | 340 |
| 8.11.12 | Monthly crop water requirement for the enroute command under Narikudi branch | 341 |
| 8.11.13 | Monthly crop water requirement for the enroute command under Tiruchuli branch | 342 |
| 8.12 | Computation of municipal & industrial water requirements | 343 |
| 8.13 | Month-wise demands of various branch canals served by the link canal | 344-345 |
| 11.1 | List of villages along the link canal with area and houses affected | 346-348 |
| 11.2 | Details of man power / employment generated in the link canal project | 349 |
| 12.1 | Construction Schedule | 350 |
| 12.2 | Earthwork excavator requirement for canal (soil) | 351-352 |
| 12.3 | Earthwork excavation equipment requirement for canal (Hard Rock) | 353-354 |
| 12.4 | Earthwork formation equipment for canal (Embankment) | 355-356 |
| 12.5 | Batching plant and concrete mixers requirement for canal | 357-359 |
| 12.6 | Computation of Jack hammers and Air compressors for tunnel | 360 |
| 12.7 | Earthwork excavation equipment for tunnel | 361-364 |
| 12.8 | Organization Chart | 365 |
| 13.0 | General Abstract | 366 |
| 13.1 | General Abstract of Unit I – Head works | 367 |
| 13.2 | General Abstract of Unit II – Canal | 368-369 |

| Annexure No. | Details | Page No. |
|---------------------|--|-----------------|
| 13.2.1 | Unit : II Canal Cost of Land Acquisition | 370 |
| 13.2.1.1 | Computation of land value | 371-375 |
| 13.2.2 | Abstract of cost of tunnels | 376 |
| 13.2.3 | D – cost for regulators | 377-378 |
| 13.2.4 | F – Cross Drainage Structures- Aqueducts / Syphon Aqueducts | 379 |
| 13.2.5 | F – Cross Drainage Structures- Canal Syphons | 380 |
| 13.2.6 | F – Cross Drainage Structures- Super Passages | 381 |
| 13.2.7 | F – Cross Drainage Structures- Under Tunnel | 382-383 |
| 13.2.7.1 | F – Cross Drainage Structures- Over Pass | 384-385 |
| 13.2.8 | G – Cross Masonry structures | 386-389 |
| 13.2.9 | L – Earth work and Lining | 390-392 |
| 13.2.9.1 | Abstract of Quantities for earth work, Lining and Land requirement | 393-394 |
| 13.2.9.2 | Pressure relief Value and Polythene sheet requirement | 395-396 |
| 13.2.10 | Cost of Branch Canal | 397 |
| 13.2.11 | M – Plantation | 398 |
| 13.2.12 | O – Miscellaneous | 399-400 |
| 13.2.13 | R – Communications | 401 |
| 13.2.14 | U, V on farm development cost (Pipe line distribution) | 402 |
| 13.2.15 | X – Environment & Ecology | 403-404 |
| 13.3.1 | Total production after introduction of irrigation in the command area of link project | 405 |
| 13.3.2 | Total production before introduction of irrigation in the command area of link project (only rainfed condition) considered | 406 |
| 13.4 | Computation of cost benefits for mini diary unit | 407 |
| 13.5 | Calculation of Benefit – cost Ration (Project as a whole) | 408 |
| 13.6 | Internal Rate of Return (IRR) | 409-411 |

Volume – III

Appendices

| Appendix No. | Particulars | Page No. |
|---------------------|---|-----------------|
| 4.1 | Preliminary State Geotechnical Report for Cauvery (Kattalai) – Vaigai – Gundar Link Project by GSI | 1-46 |
| 4.2 | Geo – Technical Investigation along Cauvery – Vaigai – Gundar Link canal by College of Engineering, Pune | 47-212 |
| 4.3 | Geophysical Investigations of the proposed Cauvery – Vaigai - Gundar Link Project by College of Engineering, Pune | 213-296 |
| 4.4 | Feasibility stage soil investigation (Borrow area) along Cauvery (Kattalai) – Vaigai – Gundar Link Project by NIT, Tiruchirappalli | 297-326 |
| 4.5 | Report on the construction materials survey and laboratory testing of Rock and Sand samples for use as coarse and fine aggregates in concrete for Cauvery (Kattalai) – Vaigai – Gundar Link Project by CSMRS, New Delhi | 327-402 |
| 13.1 | Rate analysis (Abstract and item wise) | 403-478 |

Volume – IV Drawings

| Sl.No. | Plate No. | Title |
|--------|------------------|--|
| 1 | 1.1 | Southern water grid |
| 2 | 1.2 | schematic line diagram of the link system |
| 3 | 1.3 | Index map of Cauvery (Kattalai) – Vaigai – Gundar link project |
| 4 | 2.1 | Basin map of Cauvery |
| 5 | 2.2 | Basin map of streams between Cauvery and Vaigai |
| 6 | 2.3 | Basin map of Vaigai |
| 7 | 2.4 | Basin map of streams between Vaigai and Vaippar |
| 8 | 2.5.1 to 2.5.4 | Geological Map of project area |
| 9 | 4.1 | Location of GTS BM connected to the link alignment |
| 10 | 4.2(1/3) | Plan of Kattalai Barrage on Cauvery |
| 11 | 4.2(2/3) | Elevation of Kattalai Barrage from u/s and d/s |
| 12 | 4.2(3/3) | Plan at bottom of Kattalai Barrage |
| 13 | 4.3.1 to 4.3.12 | Canal alignment of CVG link |
| 14 | 4.4.1 to 4.4.26 | Contour plan and L-Section of link alignment |
| 15 | 4.5.1 to 4.5.2 | Communication Map |
| 16 | 4.6.1 to 4.6.2 | Soil map |
| 17 | 4.7.1 to 4.7.7 | Sub-surface vertical lithological sections |
| 18 | 4.8.1 to 4.8.2 | Location of Soil Sample Pits |
| 19 | 4.9.1 to 4.9.2 | Location of Drill Holes |
| 20 | 4.10.1 to 4.10.2 | Quarry sites |
| 21 | 5.1 | Isohyetal map of Cauvery basin |
| 22 | 5.2 | Isohyetal map of streams between Cauvery and Vaigai basins |
| 23 | 5.3 | Isohyetal map of Vaigai basin |
| 24 | 5.4 | Isohyetal map of streams between Vaigai and Vaippar basins |
| 25 | 6.1(1/3) | Plan of proposed Head Regulator at offtake |
| 26 | 6.1(2/3) | Sectional Elevation of proposed Head Regulator |

| Sl.No. | Plate No. | Title |
|---------------|------------------|---|
| 27 | 6.1(3/3) | Sectional Elevations of Abutment, Wing wall and canal at Head Regulator |
| 28 | 6.2.1 to 6.2.2 | Typical Sections of Link Canal at various reaches |
| 29 | 6.3.1 to 6.3.4 | Typical section of Tunnel, support system, concrete lining and grouting details |
| 30 | 6.4(1/2) | Typical Details of Canal Lining |
| 31 | 6.4(2/2) | Drainage Arrangement of Lined Canal |
| 32 | 6.5(1/2) | Plan of Aqueduct @ RD 34.46 Km |
| 33 | 6.5(2/2) | Sectional Elevation of Aqueduct @ RD 34.46 Km |
| 34 | 6.6(1/2) | Plan of Super Passage @ RD 101.75 Km |
| 35 | 6.6(2/2) | Sectional Elevation of Super Passage @ RD 101.75 Km |
| 36 | 6.7 | Plan and sectional elevation of Syphon aqueduct at RD 23.35 Km |
| 37 | 6.8(1/3) | Plan of Canal Syphon at RD 5.53 Km |
| 38 | 6.8(2/3) & (3/3) | Sectional Elevation of Canal Syphon at RD 5.53 Km |
| 39 | 6.9(1/2) | Plan of Cross Regulator Plan @ RD 96.00 Km |
| 40 | 6.9(2/2) | Sectional Elevation of Cross Regulator @ RD 96.00 Km |
| 41 | 6.10 | Plan and sectional elevation of Road Bridge (Double lane) at RD 19.45 km and |
| 42 | 6.11 | Plan and Sectional Elevation of Under Tunnel at RD 34.68 Km |
| 43 | 8.1.1 to 8.1.3 | Command area maps |
| 44 | 8.2.1 to 8.2.12 | Land use land cover maps of command area - Branch canal wise |